



# Federal Energy Management Program

## FEMP Designated Product: Residential Central Air Conditioners

Leading by example,  
saving energy and  
taxpayer dollars in  
federal facilities

# Purchasing Specifications for Energy-Efficient Products



Department of Energy

Building you a prosperous future where energy is clean, abundant, reliable, and affordable

### Legal Authorities

Federal agencies are required by the National Energy Conservation Policy Act (P.L. 95-619), Executive Order 13423 and Federal Acquisition Regulations (FAR) Subpart 23.2 and 53.223 to specify and buy ENERGY STAR®-qualified products or, in categories not included in the ENERGY STAR program, FEMP-designated products which are among the highest 25 percent of equivalent products for energy efficiency.

### Performance Requirements for Federal Purchases

System Type	Seasonal Energy Efficiency Ratio <sup>a</sup>	Energy Efficiency Ratio <sup>b</sup>
Split	14.5 or greater	12.0 or greater
Packaged	14.0 or greater	11.0 or greater

a) Based on tests performed in accordance with Air Conditioning and Refrigeration Institute (ARI) 210/240 2003 *Standard for Unitary Air Conditioners and Air-Source Heat Pump Equipment*. Seasonal Energy Efficiency Ratio is the total cooling output (in Btu) provided by the unit during its normal annual usage period for cooling divided by the total energy input (in watt-hours) during the same period.

b) Based on tests performed in accordance with ARI Standard 210/240. Energy Efficiency Ratio is the cooling capacity (in Btu/h) of the unit divided by its electrical input (in watts) at the peak rating condition of 95° F.

### Buying Energy-Efficient Central Air Conditioners

This *Specification* applies to central air conditioners (CAC) that operate on single-phase current and have cooling capacities less than 65,000 Btu/h. Room air conditioners (window and thru-the-wall) are covered by a separate specification and packaged terminal units are excluded. For CACs purchased directly from commercial sources, specify or select products that are ENERGY STAR®-qualified (see *For More Information*) or meet the *Performance Requirements* shown above. To find qualified CACs, go to the Consortium for Energy Efficiency (CEE) and Air Conditioning & Refrigeration Institute's (ARI) online directory at [www.cee hvacdirectory.org/](http://www.cee hvacdirectory.org/). A guide that explains how to use this directory is available at [www.energy star.gov/ia/products/heat\\_cool/CEE-ARI\\_Guide.pdf](http://www.energy star.gov/ia/products/heat_cool/CEE-ARI_Guide.pdf). The Seasonal Energy Efficiency Ratio or SEER is shown on the yellow EnergyGuide label required on these products. The Energy Efficiency Ratio (EER), which is considered a better measure for determining peak load, can typically be found in the manufacturer's product literature or on their Web site.



These requirements apply to the following forms of procurements: guide and project specifications; construction, renovation, repair, energy service, and operation and maintenance contracts; lease agreements and in all evaluations of solicitation responses. Model language to assist agencies with incorporating these requirements into procurement documents is available at [www.eere.energy.gov/femp/procurement/eeep\\_modellang.html](http://www.eere.energy.gov/femp/procurement/eeep_modellang.html). Buyers shall insert the standard clause from FAR section 52.223-15 into contracts and solicitations that deliver, acquire, furnish, or specify energy consuming products for use in federal facilities.

The federal supply source for CACs is the General Services Administration (GSA), which sells them through its Multiple Awards Schedules program and on-line shopping network, *GSA Advantage!* Note that not all CACs sold through GSA are ENERGY STAR-qualified and some products that do qualify may not be indicated as such. When buying CACs through this source, check the models you are considering against the CEE/ARI Directory to assure that they meet this *Specification*.

Agencies can claim an exception to these requirements through a written finding that no ENERGY STAR-qualified or FEMP-designated product is life cycle cost effective for the specific application.

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## Buyer Tips

Federal buyers should require that CACs be installed in accordance with the “HVAC Quality Installation (QI) Specification” published by the Air Conditioning Contractors of America (see *For More Information*).

Installation problems like oversizing, improper charging, and leaky ducts result in efficiency losses, occupant discomfort, and shortened equipment life. Requiring the contractor to follow the QI specification will assure that these and other problems are addressed and that the energy and cost savings are achieved.

In the hot climate zones, consider installing CACs that exceed the *Performance Requirements* shown on the previous page. Depending on utility rates, additional cost savings can be achieved.

Refrigerants with ozone destroying hydrochlorofluorocarbons (HCFCs) were commonly used in CACs until recently. When retiring CACs that contains HCFCs, the Clean Air Act (see *For More Information*) requires that certified technicians recover the refrigerant on-site and dispose of it in an environmentally-friendly manner.

## User Tips

Consider leaving CACs off during unoccupied hours, or using a programmable thermostat to minimize unnecessary operation of the unit. Regular maintenance (e.g., charging refrigerant, replacing filters, etc.) is necessary to maintain peak performance.

Cost-Effectiveness Example			
Performance	Base Model <sup>a</sup>	Required	Best Available <sup>b</sup>
Seasonal Energy Efficiency Ratio	13.0	14.5	21.0
Energy Efficiency Ratio	9.0	12.0	14.0
Annual Energy Use (kWh/year)	3,750	3,350	2,300
Annual Energy Cost	\$300	\$270	\$185
Lifetime Energy Cost <sup>c</sup>	\$3,380	\$3,040	\$2,080
Lifetime Energy Cost Savings	—	\$340	\$1,300

- a) The SEER of the Base Model is the minimum allowed by current US DOE standards.
- b) More efficient products may have been introduced to the market since this *Specification* was published. Performance data for the best available model was obtained from the CEE/ARI Directory.
- c) Lifetime Energy Cost is the sum of the discounted value of the annual energy cost based on average usage and an assumed air conditioner life of 15 years. Future electricity price trends and a discount rate of 3.0% are based on federal guidelines (effective April 2008 to March 2009).

## Cost-Effectiveness Assumptions

Annual energy use in this example is based on ARI Standard 210/240 for a model with cooling capacity of 36,000 Btu/h (3 ton) and 1,300 cooling load hours per year (typical for the Washington, DC area). The assumed price for electricity is 8¢/kWh, the average rate for federal facilities throughout the United States.

## Using the Cost-Effectiveness Example

In the example above, the *Required* CAC is cost-effective if its purchase price is no more than \$340 above that of the *Base Model*. The *Best Available* model is cost-effective if its installed cost is no more than \$1,300 above the *Base Model*.

## What if my Energy Price is different?

ENERGY STAR has an Excel-based cost calculator for CACs on its Web site. Go to [http://www.energystar.gov/index.cfm?c=cac.pr\\_central\\_ac](http://www.energystar.gov/index.cfm?c=cac.pr_central_ac) and click on Savings Calculator in the column on the right. Input the SEER and capacity of the CAC, and the rate for electricity at your facility. The Output section will automatically display results that more accurately reflect your energy use and cost.

## For More Information:

EERE Information Center  
1-877-EERE-INF or 1-877-337-3463  
[www.eere.energy.gov/femp/procurement/](http://www.eere.energy.gov/femp/procurement/)

Lawrence Berkeley National Laboratory provided market research and life cycle cost analysis in support of this *Specification*.  
(202) 488-2250

General Services Administration  
(816) 926-6760  
[www.gsa.gov/](http://www.gsa.gov/)  
[www.gsaadvantage.gov/](http://www.gsaadvantage.gov/)

EPA/DOE ENERGY STAR  
(888) 782-7937  
[www.energystar.gov/](http://www.energystar.gov/)

Air Conditioning Contractors of America (ACCA)  
(202) 483-9370  
[www.acca.org/](http://www.acca.org/)

Consortium for Energy Efficiency (CEE)  
(617) 589-3949  
[www.cce1.org/](http://www.cce1.org/)

Air Conditioning and Refrigeration Institute (ARI)  
(703) 524-8800  
[www.ari.org/](http://www.ari.org/)

Clean Air Act  
U.S. Environmental Protection Agency  
(800) 296-1996  
[www.epa.gov/air/caa/](http://www.epa.gov/air/caa/)

American Council for and Energy Efficient Economy (ACEEE) publishes the *Consumer's Guide to Home Energy Savings* which contains a chapter on cooling systems. This guide is available from ACEEE at:  
(202) 429-0063  
[www.aceee.org/](http://www.aceee.org/)

## A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.



**le Energy**

Building you a prosperous future where energy is clean, abundant, reliable, and affordable